

David Zhao Akeley

PhD Student at MIT CSAIL, advised by [Jonathan Ragan-Kelley](#)

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Work Email	akeley98[at]mit.edu	UCLA Degrees	BS Computer Science, BS Mathematics
SMS	1-408-763-5241	UCLA GPA	3.762

Professional Experience

Nvidia Corporation – October 2020 - June 2024 – Developer Technology Engineer (IC3)

1. Collaborated with Nvidia Research on GPU algorithms for SDF-based¹ 2D computational geometry. “How to Accelerate 2D Shape Processing for Manufacturing and Planning” - [GTC 2023](#) (s51140)
2. Wrote Vulkan samples for `VK_EXT_graphics_pipeline_library`, `VK_KHR_timeline_semaphore`, `GL_KHR_shader_subgroup_shuffle`, `VK_NV_inherited_viewport_scissor`, and ray tracing extensions.
3. Designed [VK_NV_inherited_viewport_scissor](#) and implemented its driver and toolchain support.
4. Consulted with business partners on integrating Nvidia technology: DMM, `GL_NV_path_rendering`.

Sholari LLC – July - September 2019 – Contractor

1. Worked on a tumor growth and treatment simulator written with the Unity game engine.
2. Implemented tools for visualizing tumor responses to treatments: line graphs, waterfall (bar) plots, and the user interface for the timeline (graph x-axis).
3. Wrote a multithreaded C++11 plugin for visualizing tumors & immune system responses as particle clouds, and integrated it with the single-threaded C# Unity Engine.

Stanford University – June - September 2018 – Undergraduate Research Assistant

1. Helped prototype Aetherling, a Haskell-embedded domain-specific language for designing hardware image processing pipelines with automatic parallelization and static scheduling; co-authored paper with [David Durst](#) (lead author), [Dr. Kayvon Fatahalian](#), and [Dr. Pat Hanrahan](#).
2. Implemented a functional simulator of an early prototype of Aetherling.
3. Revised the type system to remove impediments to parallelizing line buffers.

<https://aetherling.org> (“Type-Directed Scheduling of Streaming Accelerators” - PLDI 2020)

Unpaid Internships & Projects

MediocrePy – March - June 2017 – Independent Project – <https://github.com/akeley98/MediocrePy>
AVX-accelerated statistical image combine (averaging) Python module for astrophysics

Tsinghua University – July - August 2016 – Summer Intern
Microlensing event light curve fitting with Python, C++, SciPy, and Matplotlib

Jide Technology Co. – June - July 2015 – Summer Intern
Product testing and English documentation/marketing for RemixOS

WebGL Jelly Cube Project – <https://youtu.be/YwvMSeB6NzU>
Reflection and refraction web demo; UCLA Fall 2017 computer graphics class third place winner²

Myricube – Vulkan Voxel Renderer – <https://github.com/akeley98/myricube>
Experiments with hybrid raycasting/rasterization voxel rendering, with low-latency model updates

Proposed gem5 Partial Bypassing Patch – <https://gem5-review.googlesource.com/c/public/gem5/+/-/27767>
Refactored C++11 code from my Advanced Computer Architecture course project

Fonts: Computer Modern, FreeSans (GNU FreeFont), Ubuntu Mono (Dalton Maag & Canonical Ltd.)

Full CV – <https://github.com/akeley98/cv/blob/master/cv.pdf>

¹Signed Distance Field

²<https://www.facebook.com/vasilescu.alex/posts/10155206917936588>